par la différentiation on trouve

$$\frac{da_1}{2a_1^2 dt} = \frac{r_1 dr_1}{r_1^3 dt} + \frac{dx_1 dx_1' + dy_1 dy_1' + dz_1 dz_1'}{k^2 (1 + m_1) dt^2},$$

c'est-à-dire,

$$\frac{da_1}{2a_1^2 dt} = \frac{x_1 dx_1 + y_1 dy_1 + z_1 dz_1}{r_1^3 dt} + \frac{dx_1 dx_1' + dy_1 dy_1' + dz_1 dz_1'}{k^2 (1 + m_1) dt^2},$$

dans laquelle au lieu de $dx_1 dx_1'$ il faut mettre $(dx_1) + (c_{x_1})_0'' dt^2$, et $(dx_1') + (c_{x_1})_0'' dt$, ainsi pour y et z.

Après quelques réductions qui se présentent en tenant compte de ce qui est dû au mouvement elliptique, et par l'évanouissement des termes de second ordre, l'on trouve

$$\frac{da_1}{2a_1^2 dt} = \frac{dx_1 (c_{x_1})_0'' + dy_1 (c_{y_1})_0'' + dz_1 (c_{z_1})_0''}{k^2 (1 + m_1) dt};$$

mais l'on a

$$(c_{x_1})_0'' = m_2 k^2 \left(\frac{x_2 - x_1}{\rho_{12}^3} - \frac{x_2}{r_2^3} \right), \text{ etc.}$$

Donc

$$\frac{da_1}{2a_1^2 dt} = \frac{m_2}{1 + m_1} \left\{ \frac{dx_1 (x_2 - x_1) + dy_1 (y_2 - y_1) + dz_1 (z_2 - z_1)}{\rho_{12}^3 dt} \right.$$
$$\left. - \frac{dx_1 . x_2 + dy_1 . y_2 + dz_1 . z_2}{r_2^3 dt} \right\}$$
$$= \frac{m_2}{1 + m_1} \cdot \frac{d}{dt} \left\{ \frac{1}{\rho_{12}} - \frac{x_1 x_2 + y_1 y_2 + z_1 z_2}{r_2^3} \right\},$$

en faisant varier dans cette dernière seulement les coordonnées de m_1.

(Voyez l'excellent mémoire de M. Lespiault, *Théorie géométrique de la Variation des Éléments des Planètes*, 1868, Paris, Gauthier-Villars.)

On a Form of Reading Microscope which appears to combine most of the Advantages of the German and English Forms. By E. J. Stone, M.A., F.R.S.

The chief advantage of the English form appears to consist in the sensible coincidence of the axis of the screw of measurement with the line along which the measures are made.

The chief defects appear to be connected with the nature of the bearing from which measurements are made. This bearing is much exposed, and any alteration of its state during the observations directly affects to its full extent the readings.
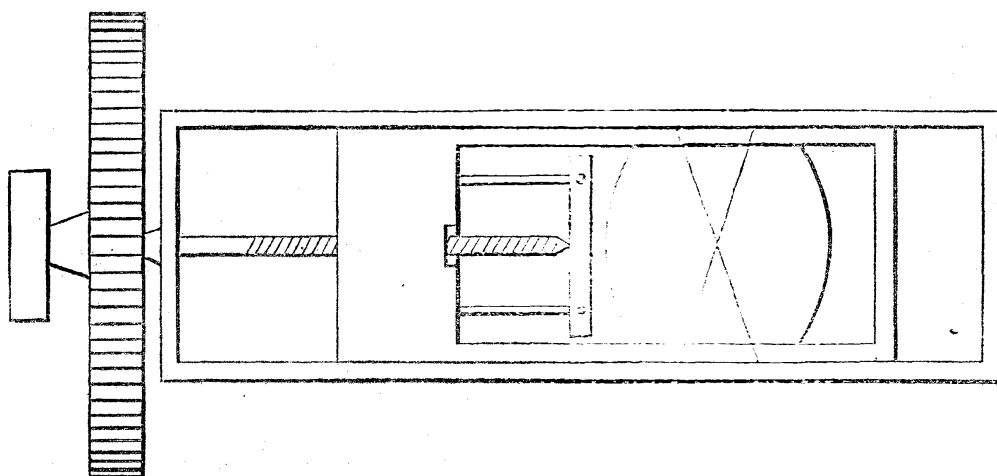
The chief advantages of the German form appear to arise from the nature of the bearing against which the screw abuts, and from which the measures are taken, and the protection of this bearing from dirt by its inclosure within the microscope.

The chief defect of this form appears to be that the axis of the measuring screw is far removed from the line of measurement, and that any play in the position of the screw produces very sensible errors along the line of measurement.

If these views are correct, there is no great difficulty in making a microscope, as shown in the figure, which shall combine the advantages of both systems.

I have furnished Mr. Simms with a plan which appeared to satisfy the necessary requirements, and he has kindly had a Microscope constructed for exhibition at the Meeting.* I should be glad to hear of objections to the form suggested, with a view to improvements.

* The Microscope was exhibited at the January Meeting.—ED.